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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,756

09/01/2006

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EXAMINER

YEE, DEBORAH

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

01/28/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,756	Applicant(s) IGARASHI ET AL.	
	Examiner Deborah Yee	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/10/08;12/20/07;10/3/06;9/01/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 to 3, 5, and 7 to 16 are rejected under 35 U.S.C. 102 (b) as being anticipated by Japanese patents 61-157655 ("JP-655") which is cited by Applicant in IDS filed July 10, 2008 or German Patent DE 2428821 ("DE-821").

3. JP-655 and DE-821, each disclose specific graphitic cast iron alloys that meet the claimed composition and satisfy the claimed equation $Si + (2/7)W \leq 8$. See JP-655, examples 4 and 7 on page 322; and DE-821, example on pages 5-6.

4. Even though prior art examples contain additional elements not recited by the claims, such are not excluded by the recitation "comprising". Note the term "comprising" is inclusive of all non-recited elements, even in major amounts.

5. Also since prior art examples meet the claimed composition, then the properties (e.g. X_i/X_m , Y_i/Y_m , W carbide particles on surface graphite, Ac1 temperature, oxidation loss, thermal cracking life) as recited by one or more of the dependent claims would be expected in absence of proof to the contrary.

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Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4, 5, 6 and 17 to 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patents 61-157655 ("JP-655") alone or in view of admitted prior art in paragraph [0003] of Applicant's specification.

8. The English abstract of JP-655 teaches graphitic cast iron alloy having a composition with constituents whose wt% ranges overlap those recited by the claims; and such overlap establishes a prima facie case of obviousness because it would be obvious for one skilled in the art to select the claimed alloy wt% ranges over the broader disclosure of the prior art since the prior art teaches similar wear resistant properties.

9. JP-655 teaches cast iron alloy containing a lower limit of 0.5%Cr which closely approximates present invention upper Cr limit of 0.3 % recited by claims 4, 19 and 25. Since Applicant has not demonstrated criticality of the claimed Cr range of 0.3% or less (e.g. by comparative test data), then a composition with 0.3% Cr verses a composition with slightly more Cr (say 0.5%) would depict a mere difference in the proportion of element without any attendant unexpected results which would not patentably distinguish claims over prior art.

10. JP-655 does not teach 0.003-0.02% S as recited by claim 5, but such element would be present because it is an inevitable impurity found in steel.

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11. JP-655 teaches adding small amounts of Mg as a graphite-spheroidizing element which would suggest claim 6.

12. JP-655 does not teach making exhaust equipment with cast iron alloy, but such would be an obvious application since it is well known in the metallurgical art that exhaust equipment members have been conventionally formed by inexpensive, high-Si ferritic spheroidal graphite cast iron, as evident by Applicant's admitted prior art in paragraph [0003].

13. Also since JP-655 closely meets the claimed composition, then the properties (e.g. Xi/Xm, Yi/Ym, W carbide particles on surface graphite, Ac1 temperature, oxidation loss, thermal cracking life) as recited by one or more of the dependent claims would be expected in absence of proof to the contrary.

14. Claims 4 to 6 and 17 to 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over German Patent DE 2428821 ("DE-821") alone or in view of Japanese patents 61-157655 ("JP-655") and further in view of admitted prior art in paragraph [0003] of Applicant's specification.

15. The English abstract of DE-821 teaches graphitic cast iron alloy having a composition with constituents whose wt% ranges overlap those recited by the claims; and such overlap establishes a prima facie case of obviousness because it would be obvious for one skilled in the art to select the claimed alloy wt% ranges over the broader disclosure of the prior art since the prior art teaches similar wear resistant properties.

16. DE-821 does not teach adding Mg as a graphite-spheroidizing element as recited by claim 6. It is, however, conventional practice well known in the metallurgical art to

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add Mg as a spheroidizing agent for analogous cast iron alloys, as evident by JP-655. Since spheroidal (equivalent to nodular) graphite is desired and sought by DE-821, then it would be an obvious modification well within the skill of the artisan to add Mg as a spheroidizing agent in view of JP-655 to produce no more than the known and expected effect from such an addition.

17. DE-821 does not teach using cast iron alloy to make exhaust equipment, but such would be an obvious application since it is well known in the metallurgical art that exhaust equipment members have been conventionally formed by inexpensive, high-Si ferritic spheroidal graphite cast iron, as evident by Applicant's admitted prior art in paragraph [0003].

18. Also since prior art closely meets the claimed composition, then the properties (e.g. Xi/Xm, Yi/Ym, W carbide particles on surface graphite, Ac1 temperature, oxidation loss, thermal cracking life) as recited by one or more of the dependent claims would be expected in absence of proof to the contrary.

19. The unapplied Russian patent has been cited to further depict the state of the art of cast iron alloy operating at elevated temperature.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/
Primary Examiner
Art Unit 1793

/DY/